

102.5 - Copper "Benchmark" (block, chip and rod forms) [50-g units (unless otherwise noted)]

SRMs with a "C" prefix are chill-cast blocks approximately 32 mm square and 19 mm thick.

Technical Contact: john.sieber@nist.gov

PLEASE NOTE: The tables are presented to facilitate comparisons among a family of materials to help customers select the best SRM for their needs. For specific values and uncertainties, the certificate is the only official source.

SRM	Description	Unit of Issue	Cu (mass fraction in %)	Sb	As	Bi	Cr	Co	Fe	Pb	Mn	Ni	Se	Ag	S	Te
393	Unalloyed Copper (Cu 0) (millings)	50 g	99.998	0.25	0.41	(	(	0.02	(	0.039	(	0.05	(	0.10	((
394	Unalloyed Copper (Cu I) (chips)	50 g	99.908	4.5	2.6	0.35	2.0	0.5	147	26.5	3.7	11.7	2.00	50.5	15	0.58
395	Unalloyed Copper II (chips)	50 g	99.944	8.0	1.6	0.50	6.0		96	3.25	5.3	5.4	0.63	12.2	13	0.32
396	Unalloyed Copper III (chips)	50 g	99.955			0.07	4.3	0.4	143	0.41	7.5	4.2	0.62	3.30	9.5	(0.02)
398	Unalloyed Copper V (chips)	50 g	99.98	7.5	25	2.0	(0.3)	2.8	11.4	9.9	(0.3)	7.0	17.5	20.1	(11)	10.1
399	Unalloyed Copper VI (chips)	50 g	99.79	30	47	10.5	(0.5)	0.5	20.0	114	(0.3)	506	95	117	(10)	50
400	Unalloyed Copper VII (chips)	50 g	99.70	102	140	24.5	(0.5)	0.6	41	128	(0.2)	603	214	181	(9)	153
454	Unalloyed Copper XI (chips)	35 g	99.84	24	46	19		(4)	(50)	66		(150)	479	286		27
457	Unalloyed Copper IV (solid)	rod	99.96	0.2	0.2	0.2	(0.3)	(0.2)	2.0	0.5		0.6	4.2	8.1	(4)	0.29
494	Unalloyed Copper I (solid)	rod	99.908	4.5	2.6	0.35	2.0	0.5	147	26.5	3.7	11.7	2.00	50.5	15	0.58
495	Unalloyed Copper II (solid)	rod	99.944	8.0	1.6	0.50	6.0		96	3.25	5.3	5.4	0.63	12.2	13	0.32
496	Unalloyed Copper III (solid)	rod	99.955			0.07	4.3	0.4	143	0.41	7.5	4.2	0.62	3.30	9.5	(0.02)
498	Unalloyed Copper V (solid)	rod	99.98	7.4	25	2.0	(0.3)	2.7	11	10	(0.3)	7.0	17.5	20.1	(11)	10.1
499	Unalloyed Copper VI (solid)	rod	99.79	30	47	10.5	(0.5)	0.5	20.0	114	(0.3)	506	95	117	(10)	50
500	Unalloyed Copper VII (solid)	rod	99.70	102	140	24.5	(0.5)	0.6	41	128	(0.2)	603	214	181	(9)	153
C1251a	Phosphorus Copper Cu VIII	ea	99.89	14.9	16	3.7	(3)	13.2	285	23.5	4.6	23.6	11	80	(35)	16
C1253a	Phosphorus Copper X	EA	99.46	139	436	(56)	260	454	290	243	357	491	136	494	(50)	168
C1252a	Phosphorus Copper Cu IX	EA	99.87	42	118	(19)	19	87	72	60	43	128	56	158	(70)	54.6

Values in parentheses are not certified and are given for information only.

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Sn
(
70
1.5
0.8
4.8
(~90)
(~200)
2.2

70
1.5
0.8
5
(~90)
(~200)
16
499
120

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SRM	Description	Unit of Issue	Zn	Al	Cd	Au	Mg	Si	Be	B	Ca	Li	Pd	P	Ti	Zr
393	Unalloyed Copper (Cu 0) (millings)	50 g	((((((((((((((
394	Unalloyed Copper (Cu I) (chips)	50 g	405	(	(0.5)	(0.07)	((
395	Unalloyed Copper II (chips)	50 g	12.2	(	(0.4)	(0.13)	((
396	Unalloyed Copper III (chips)	50 g	5.0	(	(0.6)	(((
398	Unalloyed Copper V (chips)	50 g	24	(	(22)	(0.1)	((
399	Unalloyed Copper VI (chips)	50 g	45	(	(	(4)	((
400	Unalloyed Copper VII (chips)	50 g	114	(	(	(10)	((
454	Unalloyed Copper XI (chips)	35 g	7			7.5							(0.1)			
457	Unalloyed Copper IV (solid)	rod		(((((
494	Unalloyed Copper I (solid)	rod	405	(	(0.5)	(0.07)	((
495	Unalloyed Copper II (solid)	rod	12.2	(	(0.4)	(0.13)	((
496	Unalloyed Copper III (solid)	rod	5.0	(	(0.6)	(((
498	Unalloyed Copper V (solid)	rod	25	(	(	(0.1)	((
499	Unalloyed Copper VI (solid)	rod	45	(	(	(4)	((
500	Unalloyed Copper VII (solid)	rod	114	(	(	(10)	((
C1251a	Phosphorus Copper Cu VIII	ea	24	(	(	15.5	(	(						420		
C1253a	Phosphorus Copper X	EA	329	176	70	72	(150)	(580)						561		
C1252a	Phosphorus Copper Cu IX	EA	69.4	(16.9	33.9	((125		

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